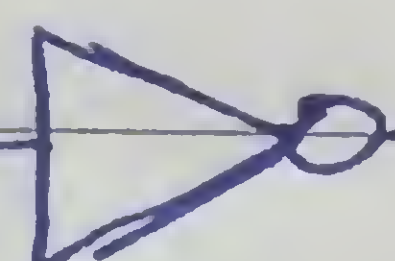


\* Principles Logic Design \*\* Three basic logic circuits:① (NOT)"Inverter"

دائرة العكس

A



x

A	x
0	1
1	0

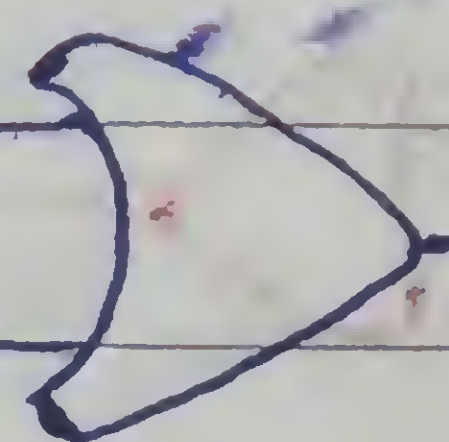
$$A = A'$$

المعادلة

② (OR)

A

B



x

A	B	x
0	0	0
1	0	1
0	1	1
1	1	1

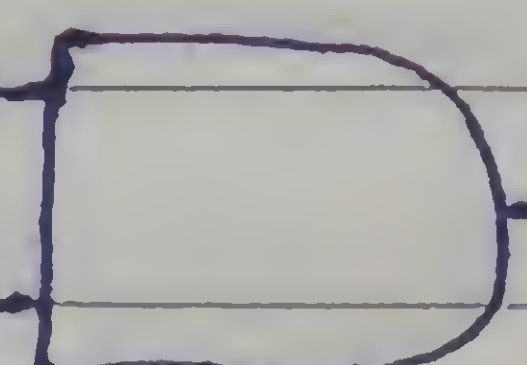
$$x = A + B$$

المعادلة

③ (AND)

A

B



x

A	B	x
0	0	0
0	1	0
1	0	0
1	1	1

$$x = A \cdot B$$

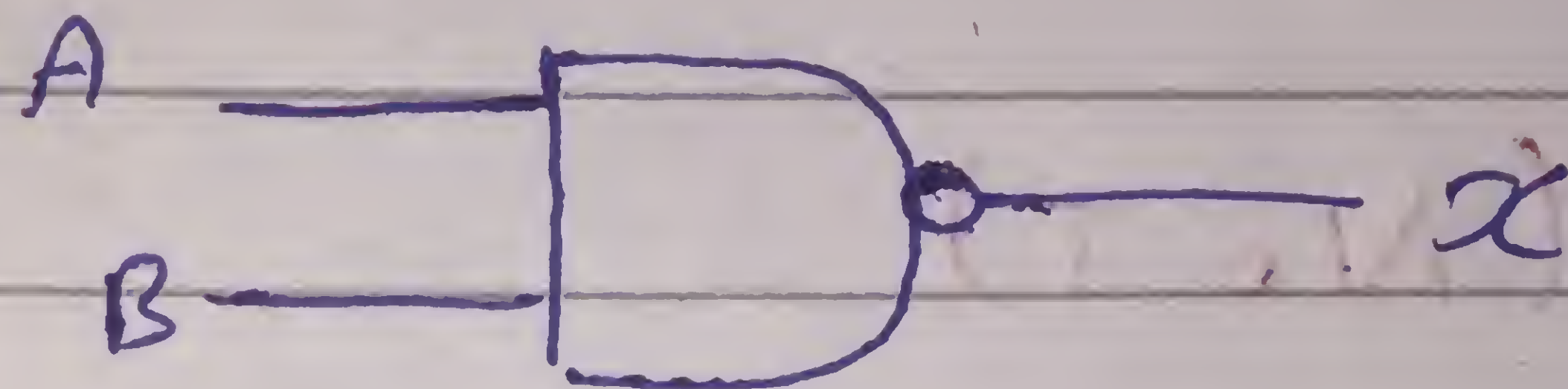
المعادلة



\* other gate but not basic:

D (NAND) "Not, AND"

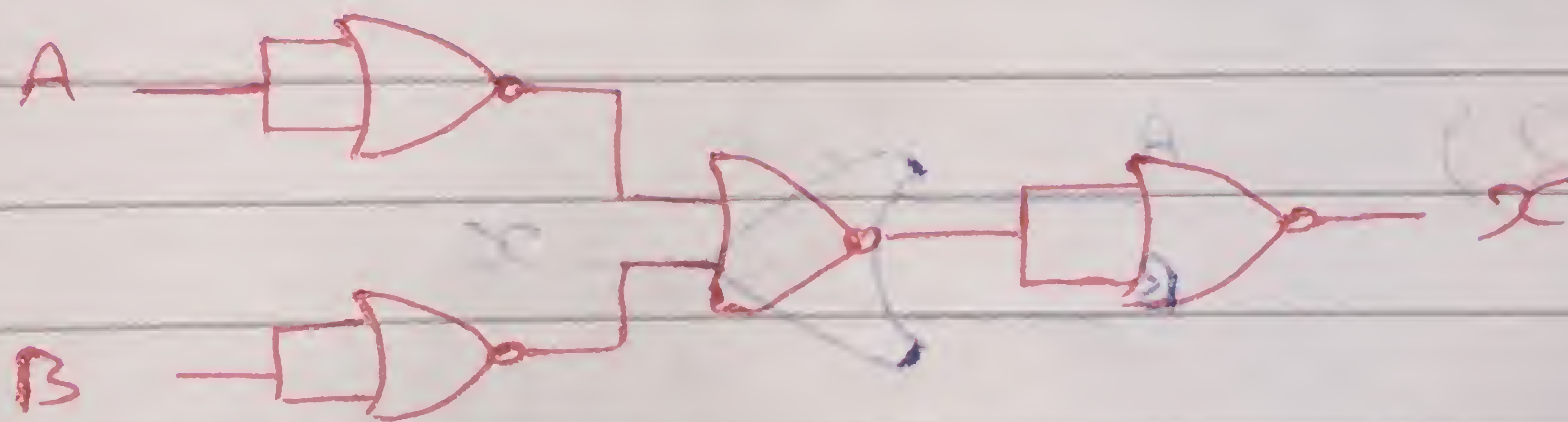
A	B	X
0	0	1
0	1	1
1	0	1
1	1	0



العلاقة التي تحدد الأول AND  
ونعكسها Not الناتج

$$AB = \bar{A} + \bar{B} \quad \text{المعادلة}$$

المدخل



X	B	A
0	0	0
1	0	1
1	1	0
1	1	1



(OR, AND)

X	B	A
---	---	---

0	0	0
---	---	---

0	1	1
---	---	---

1	0	1
---	---	---

1	1	0
---	---	---



② (NOR)

"NOT, OR"

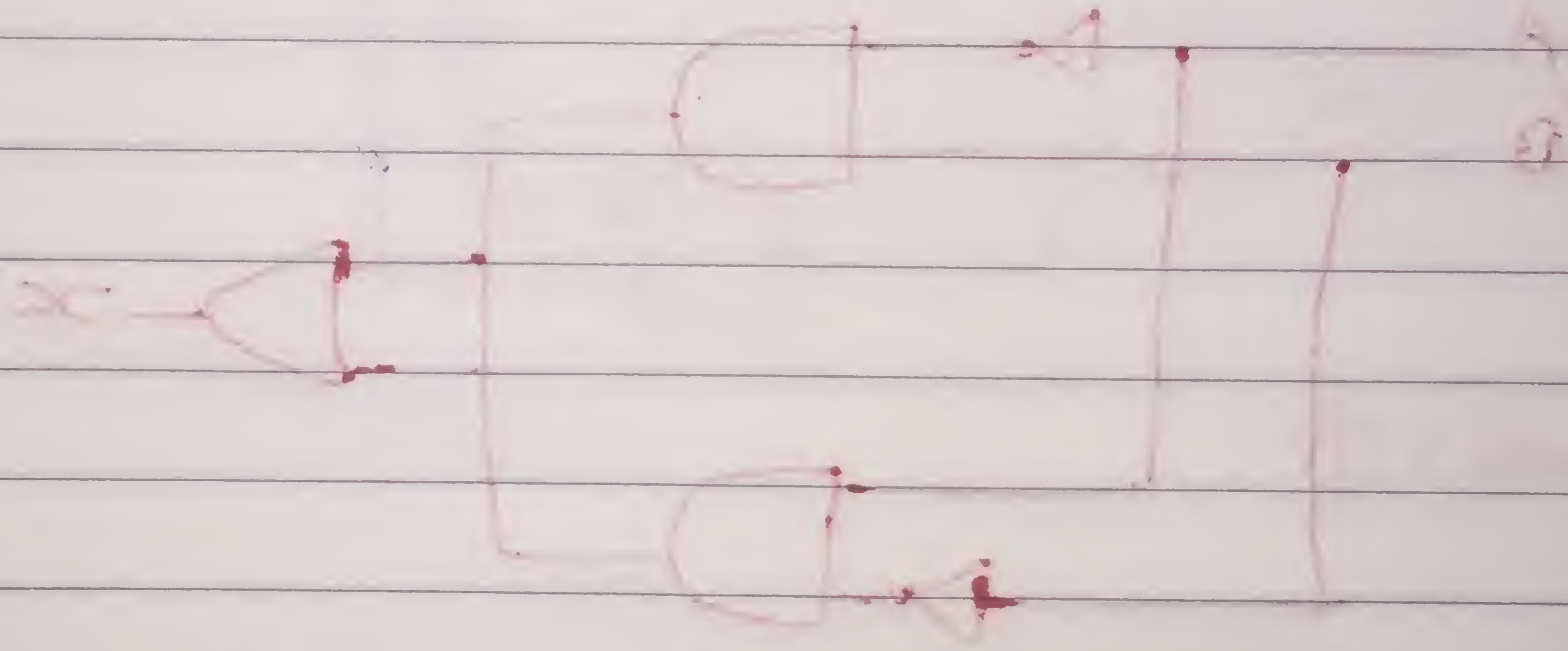
الأول R ثم نغكس  
NOT الناتج

A	B	X
0	0	1
0	1	0
1	0	0
1	1	0

X

المعادلة

\* البديل :



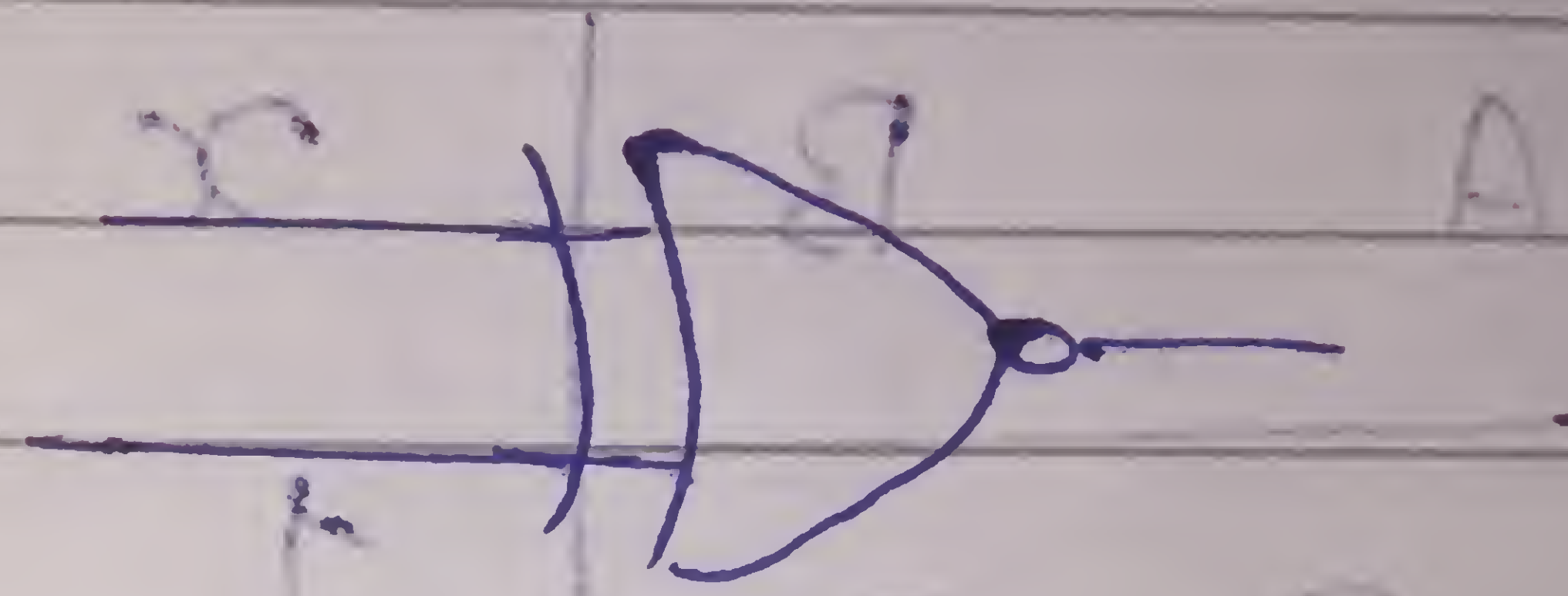


③ (XOR) "Toll" (XOR) ⑤

Web 9.0 3. 2.0

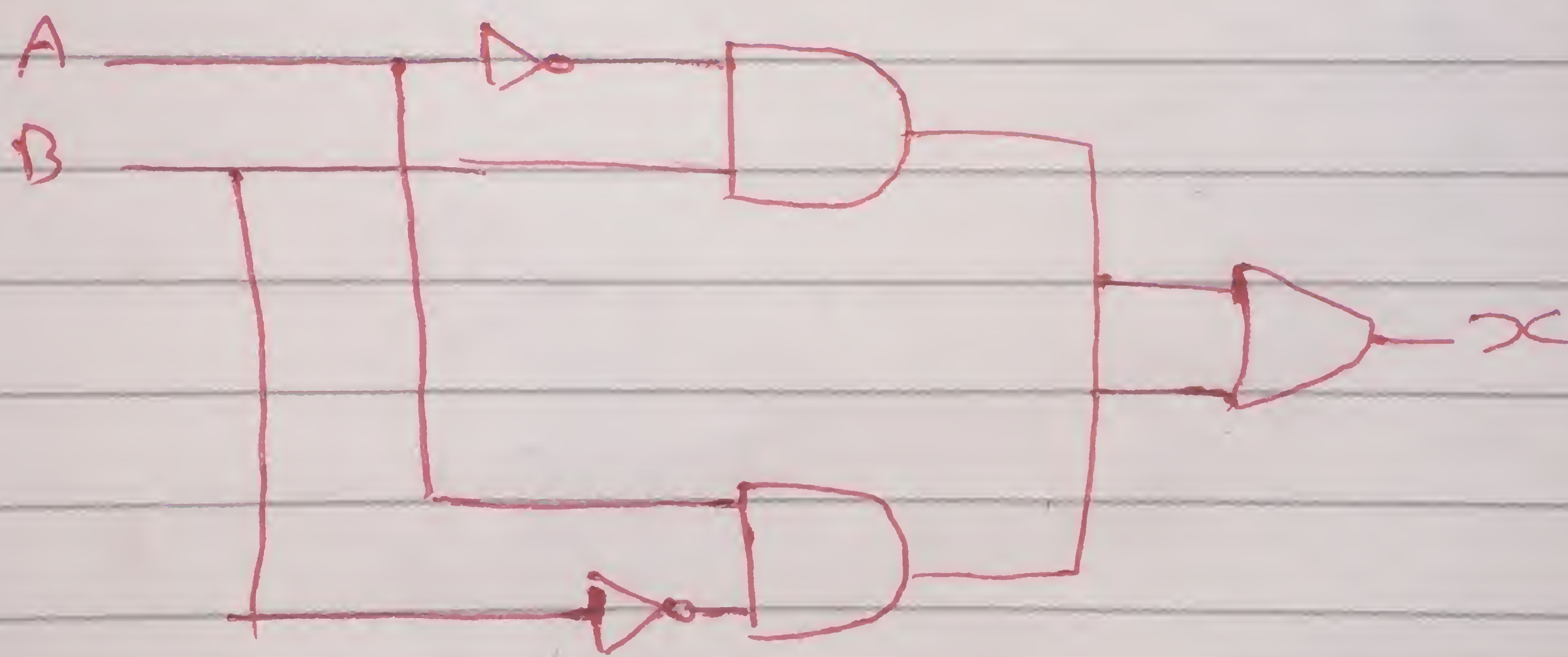
A B

A	B	X
0	0	0
0	1	1
1	0	1
1	1	0



$$X = A' \cdot B + A \cdot B'$$

الدائرة المكافئة





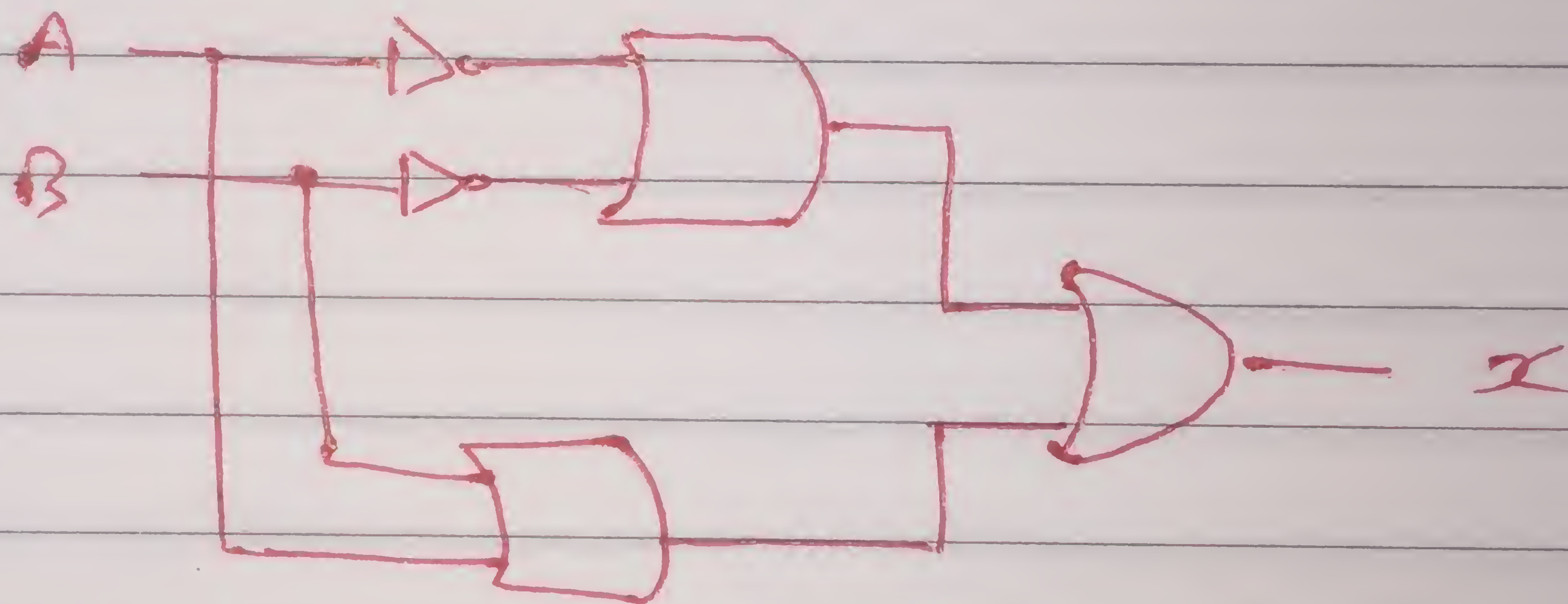
④  $X$  NOR

A	B	X
0	0	1
0	1	0
1	0	0
1	1	1

المعادلة  

$$X = A' \cdot B' + A \cdot B$$

\* البوابة المنطقية



نهاية المحاضرة D